

CHARACTERISATION, EPIDEMIOLOGY AND CONTROL  
OF SCAB ON *PROTEA* SPP. CAUSED BY *ELSINOË* SPP.  
(ANAMORPH *SPHACELOMA PROTEARUM*)

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## ABSTRACT

Protea scab, a commercially important disease of *Protea* spp., is discernable by raised, circular to oval, red – black leaf and stem lesions, which distort young plant growth. The causal agent was determined to be *Sphaceloma protearum* (Teleomorph *Elsinoë* spp.). Erumpent conidophores and acervuli in diseased tissue were characteristic of the Loculoascomycete *Elsinoë*. The teleomorph state was rarely observed. Ascospores were hyaline, ellipsoid, 4 transversely septate, 0-1 vertical septa, 11-13(-16) x 4-5  $\mu$ m. Elliptical, aseptate, hyaline conidia were obtained *in vitro* in Fries's medium. *S. protearum* is an extremely slow growing fungus, 2-5 mm in 14 days on malt extract agar (MEA) at 25 °C and 32-90 % relative humidity (optimum growth conditions). Maximum cardinal temperature was below 30 °C. Colonies were irregular, raised and convoluted, with smooth colony margin, red-brown in colour and released a red pigment into the agar. Chlorothalonil, at 1000 ppm, was added to MEA to control growth of contaminants. It had no effect on *S. protearum* growth. *Protea compacta* x *susannae* cv Pink Ice developed typical disease symptoms 3 to 4 weeks after inoculation by insertion of a mycelium plug into stem tissue, from which *S. protearum* was re-isolated. Additional hosts not previously recorded were: *P. grandiceps* x *eximia* cv Rosie, *P. compacta* x *burchellii* cv Brenda, *P. longifolia* cv Satin Pink, *P. compacta* x *obtusifolia* cv Red Baron, *P. repens* cv Guerna, *P. laurifolia* cv Regal Mink, *P. neriifolia* cv Silvertips and *P.* F2 hybrid cv Niobe. The pathogen over-wintered in old scab lesions as ascospores and / or resting mycelium. Infection was by wind and water dispersed propagules. Plants under stress, such as lack of water, were particularly susceptible to infection. *In vitro* fungicide trials of 3 isolates revealed that EC<sub>50</sub> for mycelial growth was below the 100 % inhibition level of the recommended field concentration (IRC) for captan and prochloraz (all isolates), mancozeb (isolate J24) and azoxystrobin (isolate D01). Tolyfluanid offered no protection against *S. protearum*. In the field good control of protea scab on *P.* cv Pink Ice was obtained with azoxystrobin (250 mg/l) and prochloraz (500 mg/l), with AUDPC of 1.39 and 1.43 respectively. This was followed by the positive control (1.84), mancozeb (1.96) and lastly [captan + benlate] (2.06). Plants should be sprayed when actively growing, and during hot, moist weather conditions (20-27 °C, 45-90 % humidity). Cultural methods are also discussed.

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